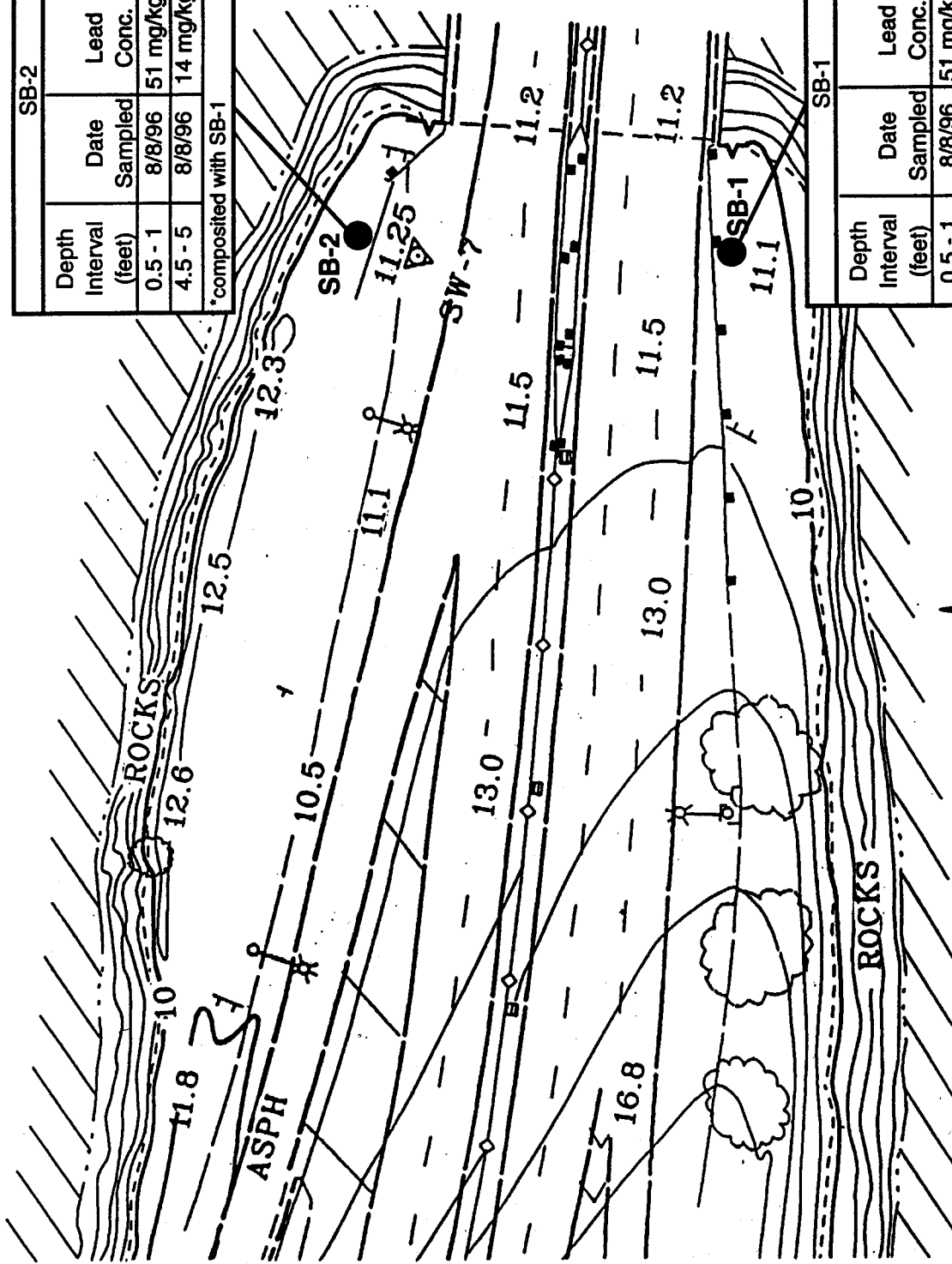


## **APPENDIX C**

### **Figures Showing Sampling Locations and Results**

SB-2			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	8/8/96	51 mg/kg*	No
4.5 - 5	8/8/96	14 mg/kg	Yes
*composited with SB-1			

SB-1			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	8/8/96	51 mg/kg*	No
4.5 - 5	8/8/96	28 mg/kg	No
*composited with SB-2			



# Explanation

- Soil Sampling Location

mg/L Milligrams per liter analysis performed using the WET extraction test

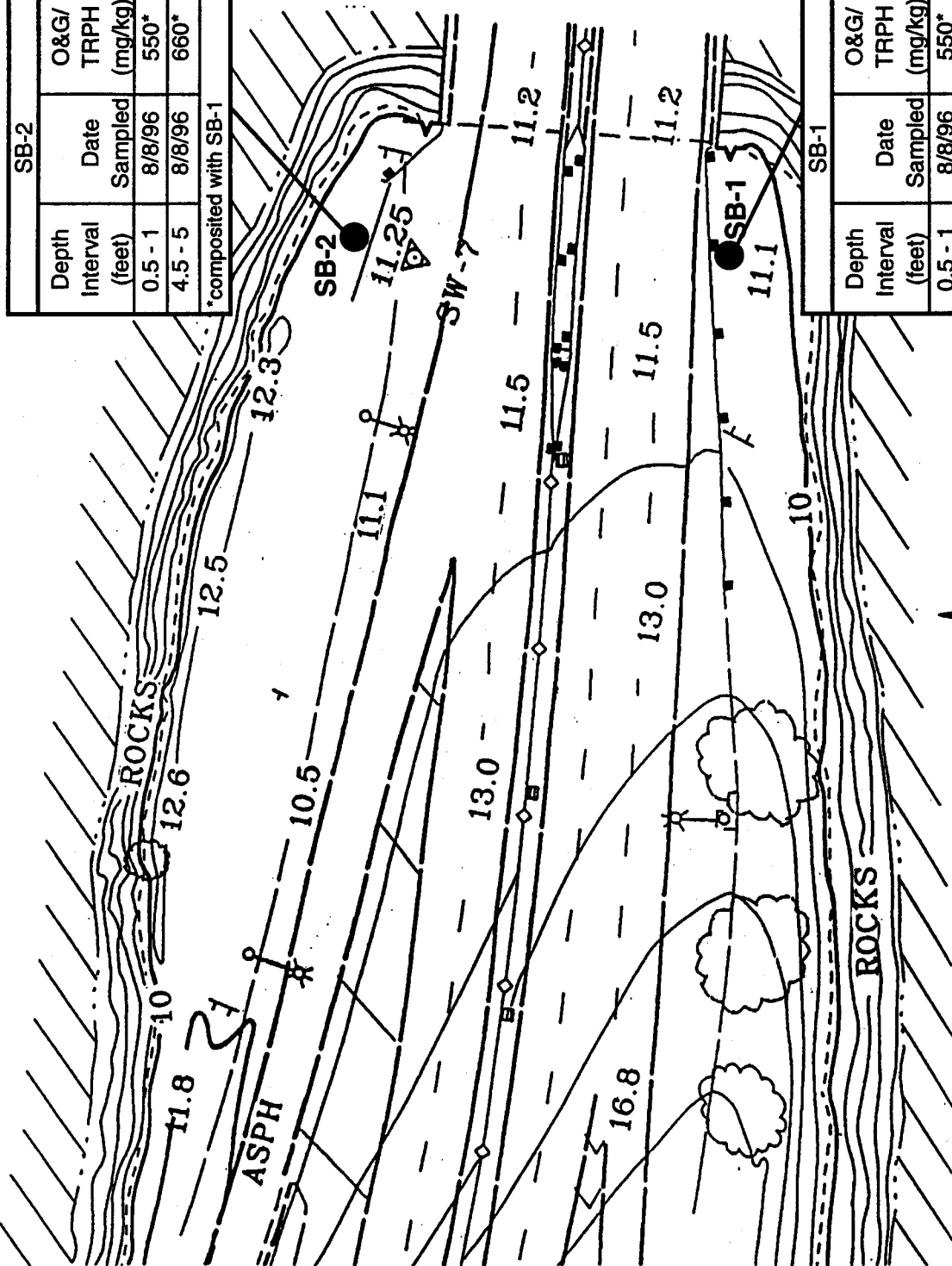
mg/kg Milligrams per kilogram

Distribution of Lead in Soil  
vicinity of the West Abutment  
Seismic Retrofit project  
Richmond-San Rafael Bridge

Approximate Scale 1" = 50'

SB-2		
Depth Interval (feet)	Date Sampled	O&G/TRPH (mg/kg)
0.5 - 1	8/8/96	550*
4.5 - 5	8/8/96	660*
*composited with SB-1		

SB-1		
Depth Interval (feet)	Date Sampled	O&G/TRPH (mg/kg)
0.5 - 1	8/8/96	550*
4.5 - 5	8/8/96	660*
*composited with SB-2		



# Explanation

- Soil Sampling Location
- mg/kg Milligrams per kilogram
- O&G/TRPH Oil and Grease/Total Recoverable Petroleum

Approximate Scale 1" = 50'

Distribution of Oil & Grease/TRPH in Soil  
 Vicinity of the West Abutment  
 Seismic Retrofit Project  
 Richmond-San Rafael Bridge

SB-66		
Depth Interval (feet)	Date Sampled	O & G / TRPH (mg/kg)
0.5 - 1	1/10/97	ND
4.5 - 5	1/10/97	510
9.5 - 10	1/10/97	ND

SB-69		
Depth Interval (feet)	Date Sampled	O & G / TRPH (mg/kg)
0.5 - 1	1/10/97	1,100
4.5 - 5	1/10/97	ND
9.5 - 10	1/10/97	4,800

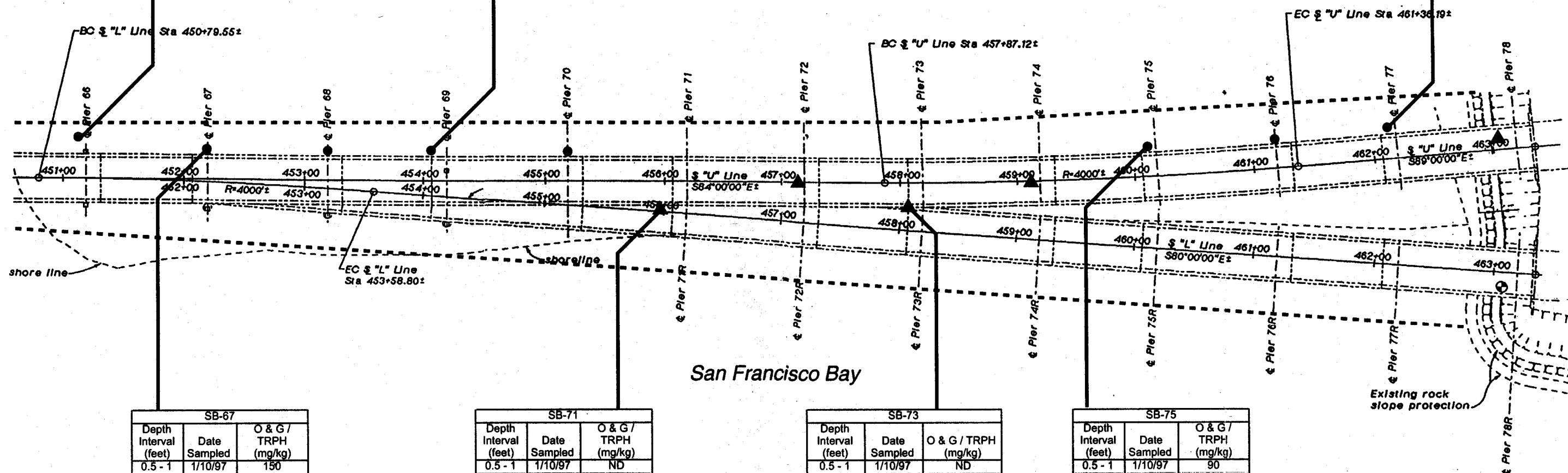
SB-77		
Depth Interval (feet)	Date Sampled	O & G / TRPH (mg/kg)
0.5 - 1	1/10/97	1,100
4.5 - 5	1/10/97	2,600
9.5 - 10	1/10/97	2,400
14.5 - 15	2/6/97	870
19.5 - 20	2/6/97	380
22.5 - 23	2/6/97	190

SB-67		
Depth Interval (feet)	Date Sampled	O & G / TRPH (mg/kg)
0.5 - 1	1/10/97	150
4.5 - 5	1/10/97	450
9.5 - 10	1/10/97	ND

SB-71		
Depth Interval (feet)	Date Sampled	O & G / TRPH (mg/kg)
0.5 - 1	1/10/97	ND
4.5 - 5	1/10/97	ND
9.5 - 10	1/10/97	ND

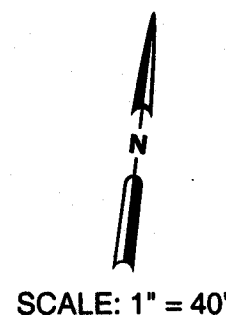
SB-73		
Depth Interval (feet)	Date Sampled	O & G / TRPH (mg/kg)
0.5 - 1	1/10/97	ND
4.5 - 5	1/10/97	5000

SB-75		
Depth Interval (feet)	Date Sampled	O & G / TRPH (mg/kg)
0.5 - 1	1/10/97	90
4.5 - 5	1/10/97	210
9.5 - 10	1/10/97	60
14.5 - 15	2/6/97	310
19.5 - 20	2/6/97	2200
21.5 - 22	2/6/97	1200



# Explanation

- Soil Sampling Location
- ▲ Soil Sampling Location under Bridge
- - - Approximate Location of Caltrans Right-of-way
- mg/kg Milligrams per kilogram
- O & G / TRPH Oil and Grease / Total Recoverable Petroleum Hydrocarbons
- ND Not Detected



NOTE: TRPH was detected in composite soil samples from Piers 68, 72, 74, 76, and 78.

Distribution of Oil & Grease / TRPH in Soil  
East Approach Structure  
Seismic Retrofit Project  
Richmond-San Rafael Bridge

SB-66			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	1/10/97	12 mg/kg	no
4.5 - 5	1/10/97	33 mg/L	yes
9.5 - 10	1/10/97	12 mg/kg	no

SB-69			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	1/10/97	17 mg/kg	no
4.5 - 5	1/10/97	18 mg/kg	no
9.5 - 10	1/10/97	7 mg/kg	no

SB-72			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	8/8/96	44 mg/kg	no
4.5 - 5	8/8/96	23 mg/L	yes
9.5 - 10	8/8/96	NA	no

SB-76			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	8/8/96	14 mg/L	yes
4.5 - 5	8/8/96	40 mg/kg	no

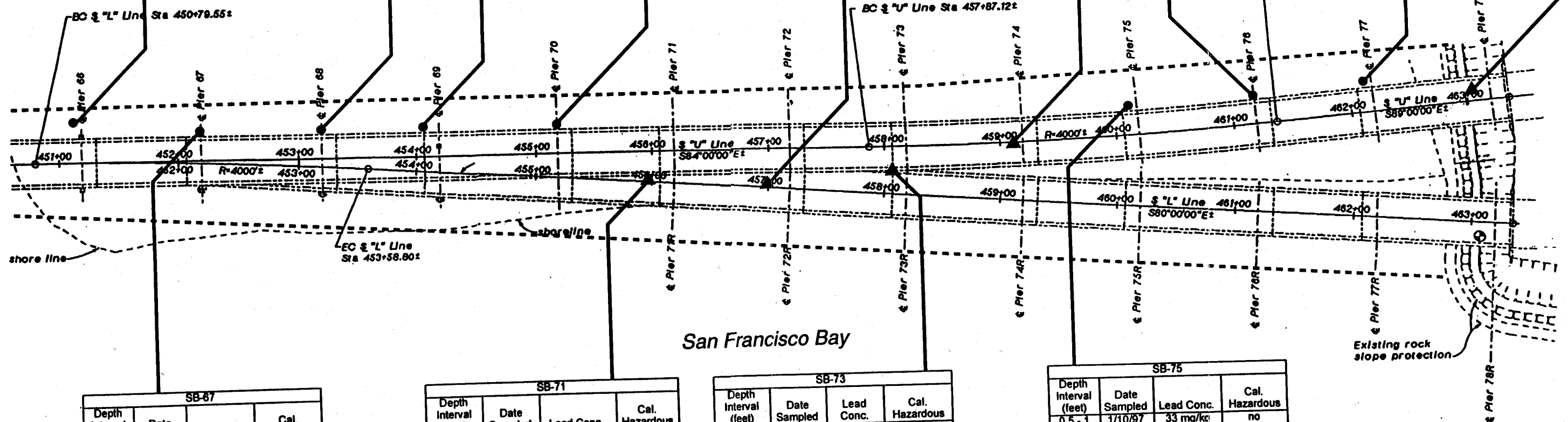
SB-78			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	8/8/96	12,000 mg/kg	yes

SB-68			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	8/8/96	38 mg/L	yes
4.5 - 5	8/8/96	3.6 mg/L	no
9.5 - 10	8/8/96	NA	no

SB-70			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	8/8/96	10 mg/L	yes
4.5 - 5	8/8/96	9.3 mg/L	yes
9.5 - 10	8/8/96	NA	no
14.5 - 15	2/6/97	9 mg/kg	no
17.5 - 18	2/6/97	10 mg/kg	no

SB-74			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	8/8/96	6.3 mg/L	yes
4.5 - 5	8/8/96	17 mg/kg	no

SB-77			
Depth Interval (feet)	Date Sampled	Lead Conc.	Cal. Hazardous
0.5 - 1	1/10/97	43 mg/kg	no
4.5 - 5	1/10/97	24 mg/kg	no
9.5 - 10	1/10/97	47 mg/kg	no
14.5 - 15	2/6/97	19 mg/kg	no
19.5 - 20	2/6/97	20 mg/kg	no
22.5 - 23	2/6/97	12 mg/kg	no



# Explanation

- Soil Sampling Location
- ▲ Soil Sampling Location under Bridge
- Approximate Location of Caltrans Right-of-way
- mg/L Milligrams per liter analysis performed using the WET extraction test
- mg/kg Milligrams per kilogram
- NA The individual sample was not analyzed but analysis of composite sample which included the individual sample revealed non-hazardous

SCALE: 1" = 40'

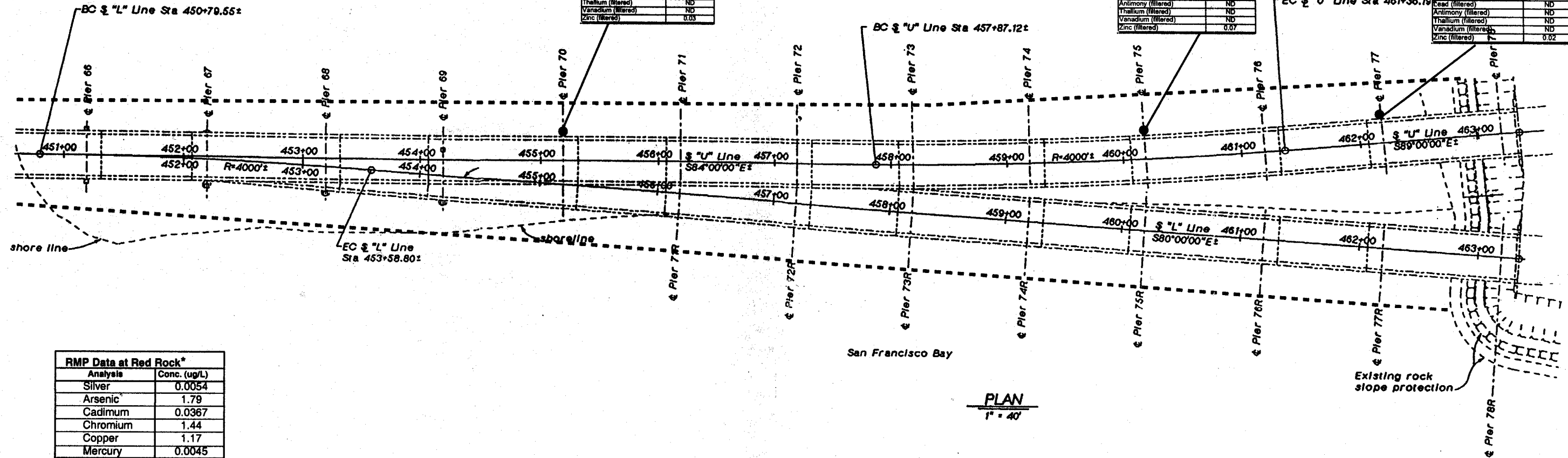
Distribution of Lead in Soil  
East Approach Structure  
Seismic Retrofit Project  
Richmond-San Rafael Bridge

CH2M HILL

Analysis	Conc. (mg/L)
TPH as diesel	0.28
TPH as gasoline	ND
Total Recoverable	ND
Petroleum Hydrocarbons	ND
Silver (unfiltered)	0.04
Arsenic (unfiltered)	ND
Barium (unfiltered)	95
Beryllium (unfiltered)	0.23
Cobalt (unfiltered)	8.4
Chromium (VI) (unfiltered)	3.5
Copper (unfiltered)	6.1
Mercury (unfiltered)	0.082
Molybdenum (unfiltered)	0.882
Nickel (unfiltered)	7.8
Lead (unfiltered)	7.2
Antimony (unfiltered)	0.3
Thallium (unfiltered)	1.7
Vanadium (unfiltered)	7.1
Zinc (unfiltered)	18
Silver (filtered)	ND
Arsenic (filtered)	0.002
Barium (filtered)	0.12
Beryllium (filtered)	ND
Cobalt (filtered)	ND
Chromium (VI) (filtered)	ND
Copper (filtered)	ND
Mercury (filtered)	ND
Molybdenum (filtered)	0.63
Nickel (filtered)	ND
Lead (filtered)	ND
Antimony (filtered)	ND
Thallium (filtered)	ND
Vanadium (filtered)	ND
Zinc (filtered)	0.03

Analysis	Conc. (mg/L)
TPH as diesel	0.12
TPH as gasoline	0.11
Total Recoverable	ND
Petroleum Hydrocarbons	ND
Silver (unfiltered)	ND
Arsenic (unfiltered)	0.02
Barium (unfiltered)	0.86
Beryllium (unfiltered)	0.004
Cobalt (unfiltered)	0.078
Chromium (VI) (unfiltered)	0.08
Copper (unfiltered)	0.12
Mercury (unfiltered)	0.0004
Molybdenum (unfiltered)	ND
Nickel (unfiltered)	0.12
Lead (unfiltered)	0.2
Antimony (unfiltered)	ND
Thallium (unfiltered)	ND
Vanadium (unfiltered)	0.12
Zinc (unfiltered)	0.3
Silver (filtered)	ND
Arsenic (filtered)	0.027
Barium (filtered)	ND
Beryllium (filtered)	ND
Cobalt (filtered)	ND
Chromium (VI) (filtered)	ND
Copper (filtered)	ND
Mercury (filtered)	ND
Molybdenum (filtered)	ND
Nickel (filtered)	ND
Lead (filtered)	ND
Antimony (filtered)	ND
Thallium (filtered)	ND
Vanadium (filtered)	ND
Zinc (filtered)	0.07

Analysis	Conc. (mg/L)
TPH as diesel	1.5
TPH as gasoline	0.08
Total Recoverable	ND
Petroleum Hydrocarbons	1.9
Silver (unfiltered)	0.03
Arsenic (unfiltered)	0.3
Barium (unfiltered)	16
Beryllium (unfiltered)	0.07
Cobalt (unfiltered)	1.3
Chromium (VI) (unfiltered)	1.8
Copper (unfiltered)	2.2
Mercury (unfiltered)	0.017
Molybdenum (unfiltered)	0.11
Nickel (unfiltered)	2.8
Lead (unfiltered)	3.3
Antimony (unfiltered)	0.1
Thallium (unfiltered)	ND
Vanadium (unfiltered)	3
Zinc (unfiltered)	4.5
Silver (filtered)	0.005
Arsenic (filtered)	ND
Barium (filtered)	0.23
Beryllium (filtered)	ND
Cobalt (filtered)	ND
Chromium (VI) (filtered)	ND
Copper (filtered)	ND
Mercury (filtered)	ND
Molybdenum (filtered)	0.04
Nickel (filtered)	ND
Lead (filtered)	ND
Antimony (filtered)	ND
Thallium (filtered)	ND
Vanadium (filtered)	ND
Zinc (filtered)	0.02



RMP Data at Red Rock*	
Analysis	Conc. (ug/L)
Silver	0.0054
Arsenic	1.79
Cadmium	0.0367
Chromium	1.44
Copper	1.17
Mercury	0.0045
Nickel	1.89
Lead	0.37
Selenium	0.37
Zinc	2.31

## Explanation

- Soil Sampling Location
  - - - Approximate Location of Caltrans Right-of-way
- All data in mg/L
- \* From "San Francisco Estuary Regional Monitoring Program for Trace Substances" (1994)

Grab Groundwater Sampling Locations in the Vicinity of the East Approach Structure  
Richmond-San Rafael Bridge